

Fig. 1

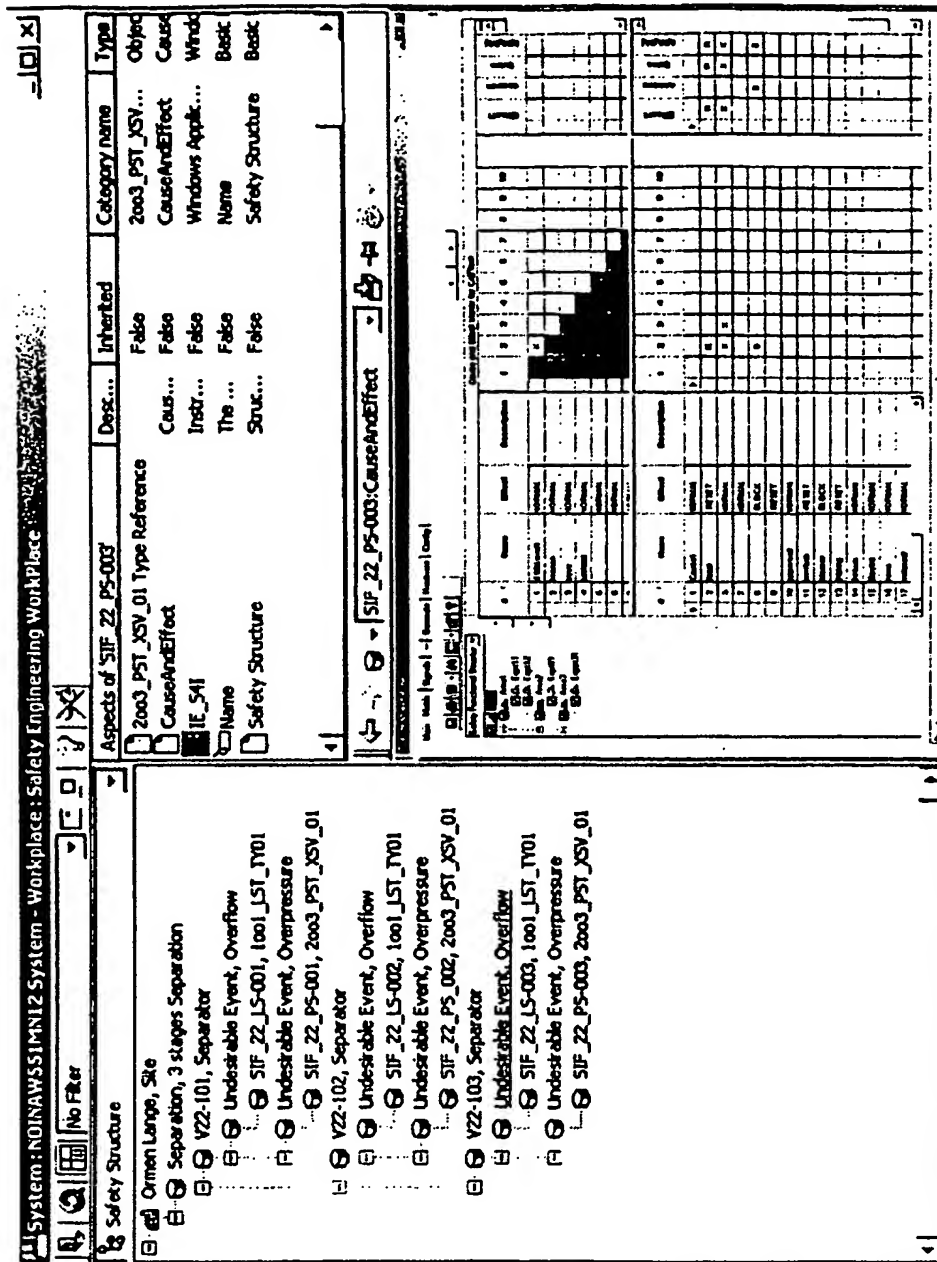


Fig. 2

1

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

User Login

User name:

Password:  ☒ Use Windows Logon Security

Server:

2

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Cause & Effect Matrix

Select Matrix

AAA

3

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant

Area1

Fig. 3

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant  
Area1

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								

#	Name	Description	Designation	1	2	3	4	Effect
1	Cause1		ZCAU1	X				X
2	regsis							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

4

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant  
Area1

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								

#	Name	Description	Designation	1	2	3	4	Effect
1	Cause1		ZCAU1	X				X
2	regsis							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

Create Cause  
Delete Effect  
Level  
Block  
Reset  
Area or Equipment

5a

Fig. 3 cont.

5b

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Show all  
Levels only  
Hide levels

Plan

Cause and Effect Matrix for AAA

Name	Description	Designation	1	2	3	4	Effect
1 ESDLevel1		ZLEV1					X
2							
3							
4							
5							
6							
7							
1 Cause1		ZCAU1	X				X
2 regsts							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

5c

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Show signals  
Hide signals  
Collapse signals

Plan

Cause and Effect Matrix for AAA

Name	Description	Designation	1	2	3	4	Effect
1 ESDLevel1		ZLEV1					X
2							
3							
4							
5							
6							
7							
1 Cause1		ZCAU1	X				X
2 regsts							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

6

Name	Description	Designation	1	2	3	4	Effect
1 Cause1		ZCAU1	X				X
2 regsts							
3							
4							
5							
6							

Fig. 3. cont.

6

Cause and Effect Matrix for AAA									
	Name	Description	Designation	1	2	3	4	Effect	
1	ESDI Level1		ZLEV1						X
2									
3									
4									
5									
6									
7									
	Name	Description	Designation	1	2	3	4	Effect	
1	Cause1		ZCAU1	X					
2	Effects								
3									

7a

CEM Cause: Cause1

Variable      3 Signals

Name: Cause1      Area: Plant

Designation: ZCAU1      Delay (s): 0

Designation:

Active: NORMAL

Latchable: ☐      Blockable: ☐

< Play      Next >

Position no: 1

7b

CEM Cause: Cause1

Variable      3 Signals

Input Datatype: bcol      Confirmation criteria: 1      Signals out of: 3

Name	Description	Assign	Normal
Samplecolla1	Sample signal	IX0.11.1.1	ND
Samplecolla2	Sample signal	Unassigned	ND
Samplecolla3	Sample signal	Unassigned	ND

Show available signals      OK      Apply      Cancel

Edit Cause      11/2/2003      S 48 Pm

Fig. 3. cont.

7c

CEM Cause: Cause1

Variable

Input Datatype: bcol Confirmation

Signals		
Name	Description	
Samplecolla1	Sample signal	IX
Samplecolla2	Sample signal	Ur
Samplecolla3	Sample signal	Ur

Hide available signals Hide signals

Signals

CEM Cause: Cause1

Variable

Input Datatype: bcol Confirma

Sig		
Name	Description	
Samplecolla1	Sample signal	
Samplecolla2	Sample signal	
Samplecolla3	Sample signal	

Hide available signals Hide si

Edit Cause

8a

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effect
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								
#	Name	Description	Designation	1	2	3	4	Effect
1	Cause1		ZCAU1	X				X
2	reps/s							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

Fig. 3 cont.

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Plant  
+ Areal1

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effekt
1	ESDLevel1		ZLEV1					X
2								
3								
4								
5								
6								
7								

#	Name	Description	Designation	1	2	3	4	Effekt
1	CAU1		ZCAU1	X				X
2	reqsts							
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

8b

#	Name	Description	Designation	1
1	ESDLevel1		ZLEV1	
2				
3				
4				
5				
6				
7				

#	Name	Description	Designation	1
1				
2	reqsts			
3				
4				

8c

#	Name	Description	Designation	1
1	ESDLevel1		ZLEV1	
2				
3				
4				
5				
6				
7				

#	Name	Description	Designation	1
1				
2	reqsts			
3				
4				
5				

Fig. 3 cont.



9

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Cause and Effect Matrix for AAA

#	Name	Description	Designation	1	2	3	4	Effekt
1	ESDLevel1		ZLEV1	10				X
2				10				X
3				10				X
4				10				X
5				10				X
6				10				X
7				10				X
8				10				X
9				10				X
10				10				X
11				10				X
12				10				X
13				10				X

Plant  
 Areal1

10

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Digital Signals

Name	Description	Assign	Normal Value
SamplebootIn1	Sample signal	IX0.11.1.1	ND
SamplebootIn2	Sample signal	Unassigned	ND
SamplebootIn3	Sample signal	Unassigned	ND
SamplebootOut4	Sample signal	Unassigned	ND
SamplebootOut5	Sample signal	Unassigned	ND
SamplebootOut6	Sample signal	Unassigned	ND

Digital Analog

Fig. 3 cont.

10

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Digital Signals			
Name	Description	Assign	Normal Value
SampleboolIn1	Sample signal	IX0.11.1.1	ND
SampleboolIn2	Sample signal	Unassigned	ND
SampleboolIn3	Sample signal	Unassigned	ND
SampleboolOut4	Sample signal	Unassigned	ND
SampleboolOut5	Sample signal	Unassigned	ND
SampleboolOut6	Sample signal	Unassigned	ND

11

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CemController

IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CemController.0
  - ModuleBus

12

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CemController

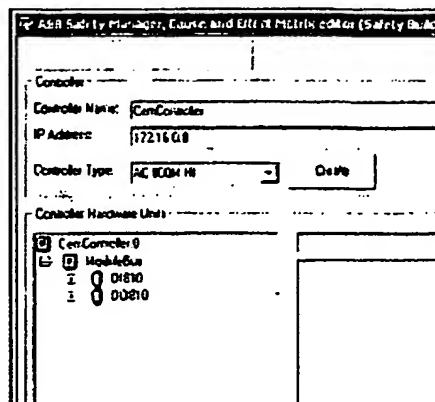
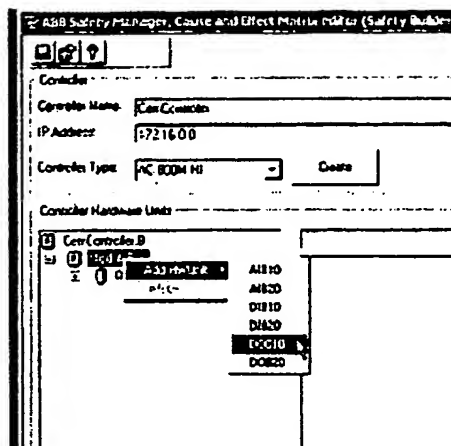
IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CemController.0
  - ModuleBus
    - AI810
    - AI820
    - DI810
    - DI810
    - DO810
    - DO820

Fig. 3 cont.



13

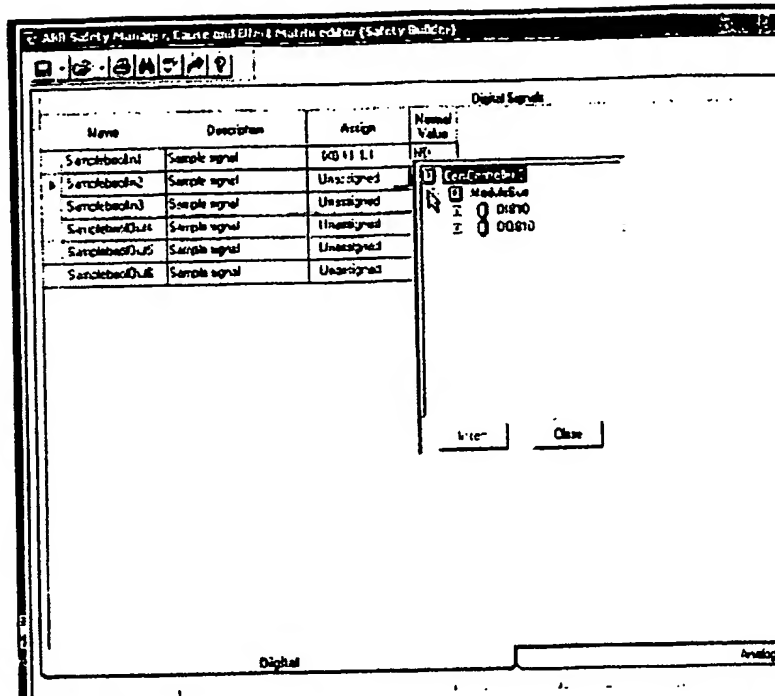
ASR Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Name	Description	Assign	Reset Value
Samplebock1	Sample signal	ND11.L1	ND
Samplebock2	Sample signal	Unassigned	ND
Samplebock3	Sample signal	Unassigned	ND
Samplebock4	Sample signal	Unassigned	ND
Samplebock5	Sample signal	Unassigned	ND
Samplebock6	Sample signal	Unassigned	ND

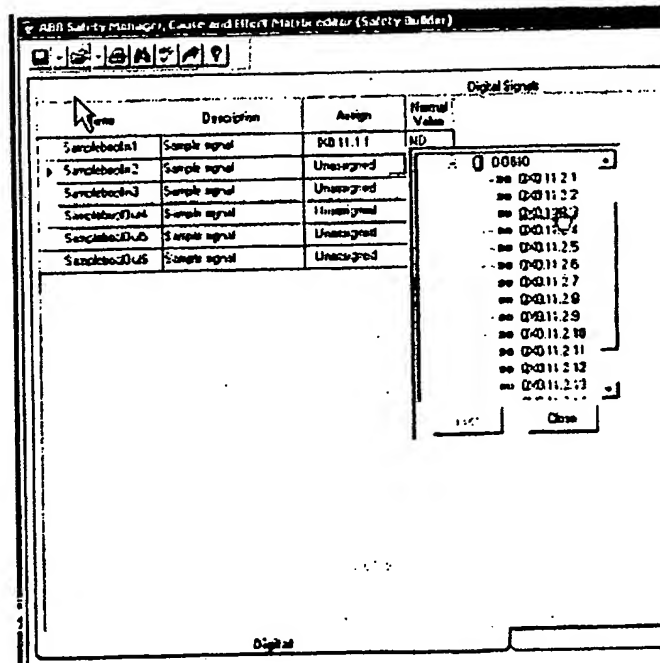
14

Fig. 3 cont.

12/19

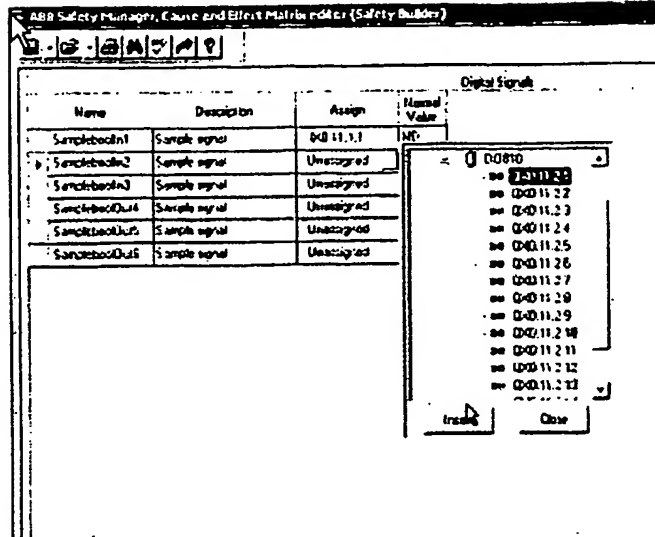


15a

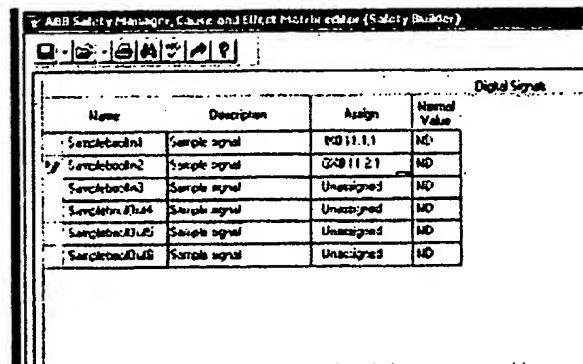


15b

**Fig. 3 cont.**



15c



16

Fig. 3 cont.

17

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CamController

IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CamController.0
- ModuleBus

18

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Controller

Controller name: CamController

IP Address: 172.16.0.0

Controller Type: AC 800M HI Create

Controller Hardware Units

- CamController.0
- ModuleBus

Fig. 3 cont.

19

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Project structure for AAA main:

Project name: CE AAAA  
 Application Name: Cera30  
 Task Name: CeraTest  
 Task Interval (ms): 50

Code Generation Options:

☐ Use Soft Controller IP Addr.  
☐ Use Designations only  
☒ Skip where no CEM interactions  
☐ Direct input to Control Builder

Generation:

Import Data  
 New Element  
 Delete Element  
 Edit Element

20

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Project structure for AAA main:

Project name: Import Controller  
 Application Name: Import Application  
 Task Name: Import Hardware  
 Task Interval (ms): Import All

Code Generation Options:

☐ Use Soft Controller IP Addr.  
☐ Use Designations only  
☒ Skip where no CEM interactions  
☐ Direct input to Control Builder

Generation:

Import Data  
 New Element  
 Delete Element  
 Edit Element

ABB Safety Manager, Cause and Effect Matrix editor (Safety Builder)

Project structure for AAA main:

Project name: CE AAAA  
 Application Name: Cera30  
 Task Name: CeraTest  
 Task Interval (ms): 50

Code Generation Options:

☐ Use Soft Controller IP Addr.  
☐ Use Designations only  
☒ Skip where no CEM interactions  
☐ Direct input to Control Builder

Generation:

Import Data  
 New Element  
 Delete Element  
 Edit Element

Fig. 3 cont.

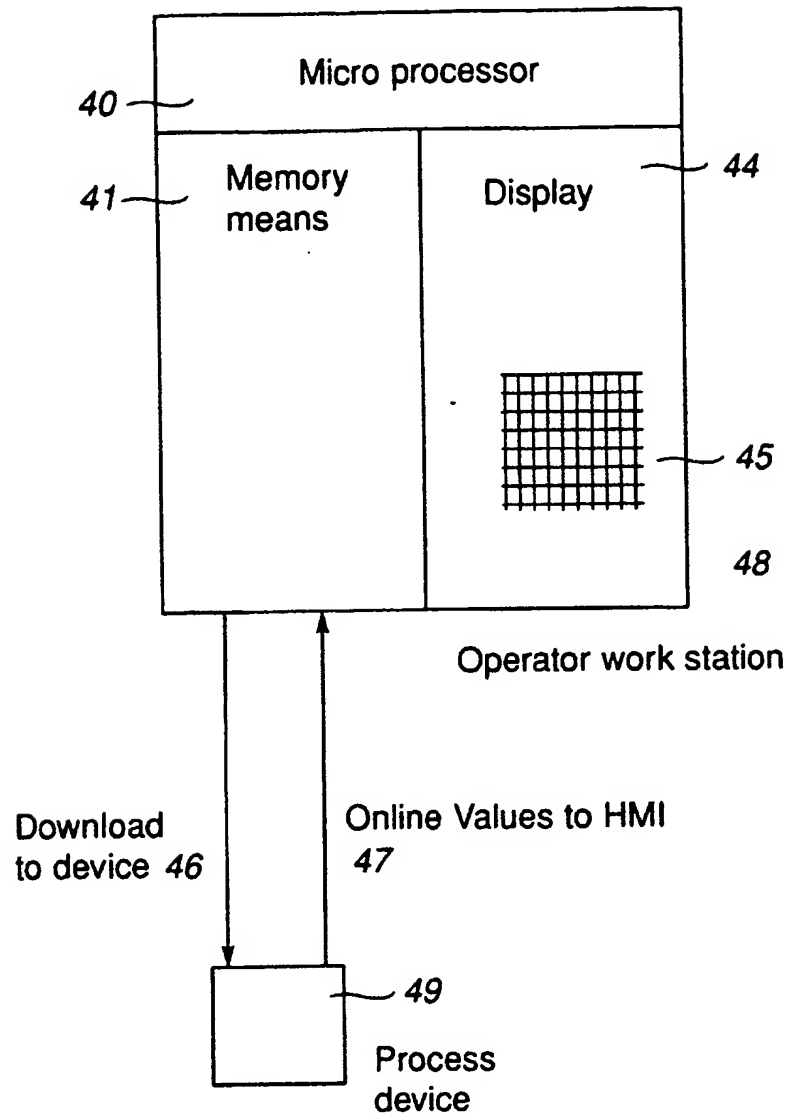


Fig. 4



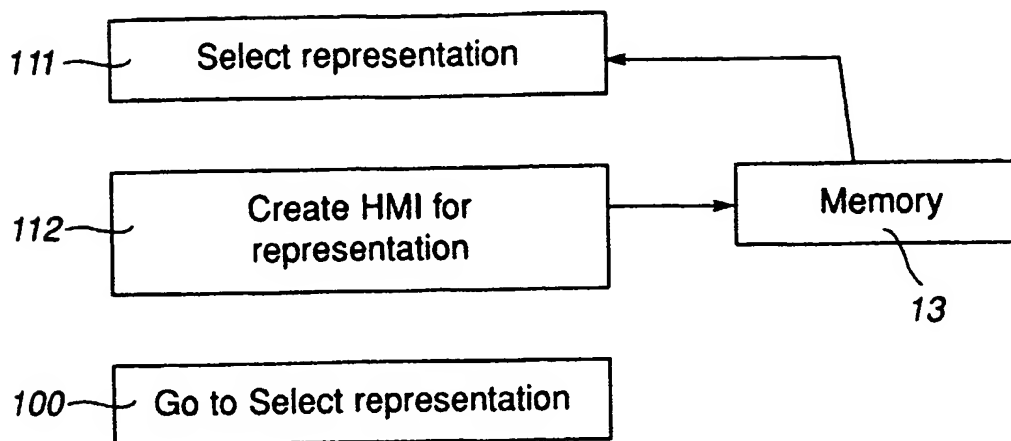


Fig. 5a

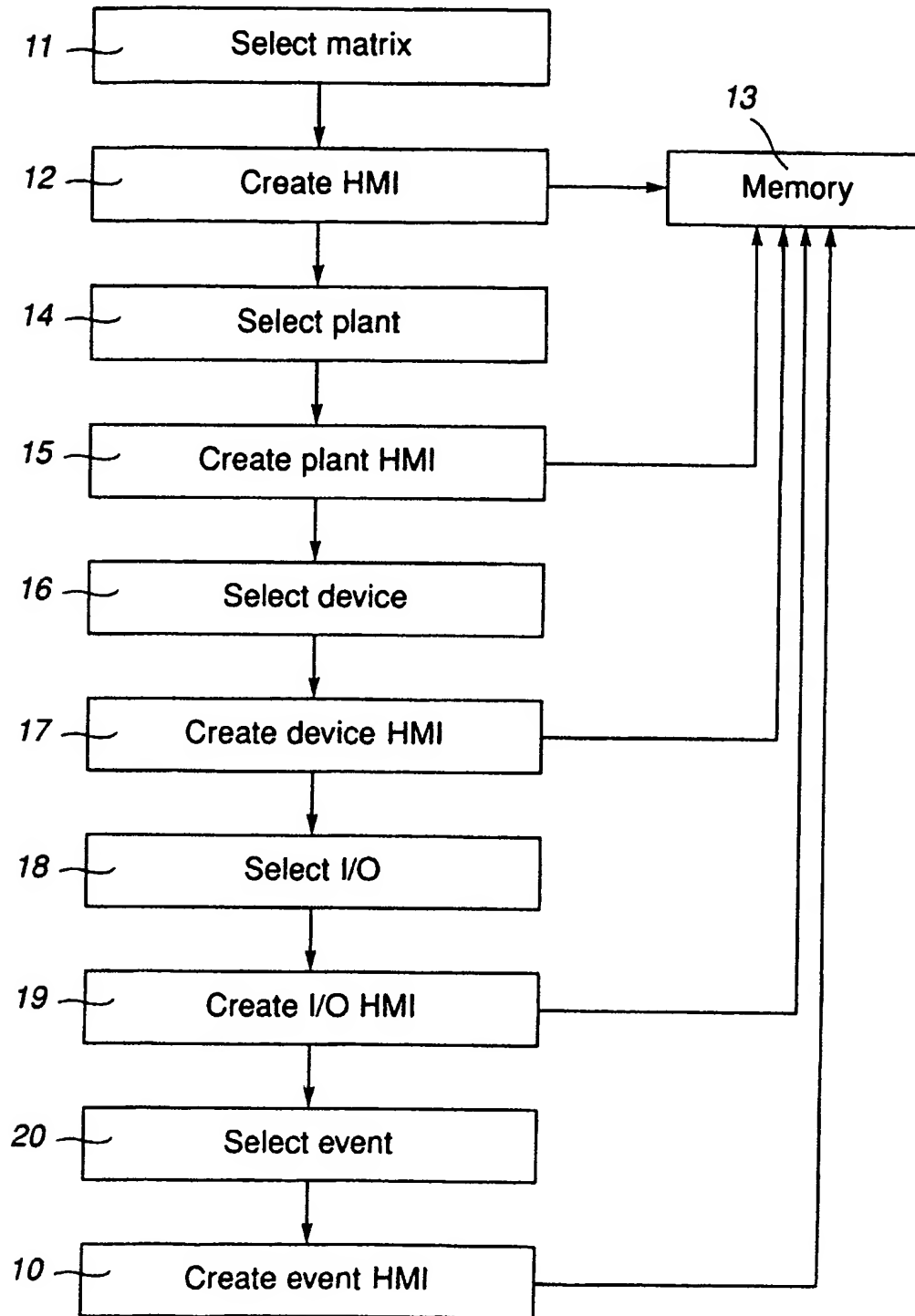


Fig. 5b

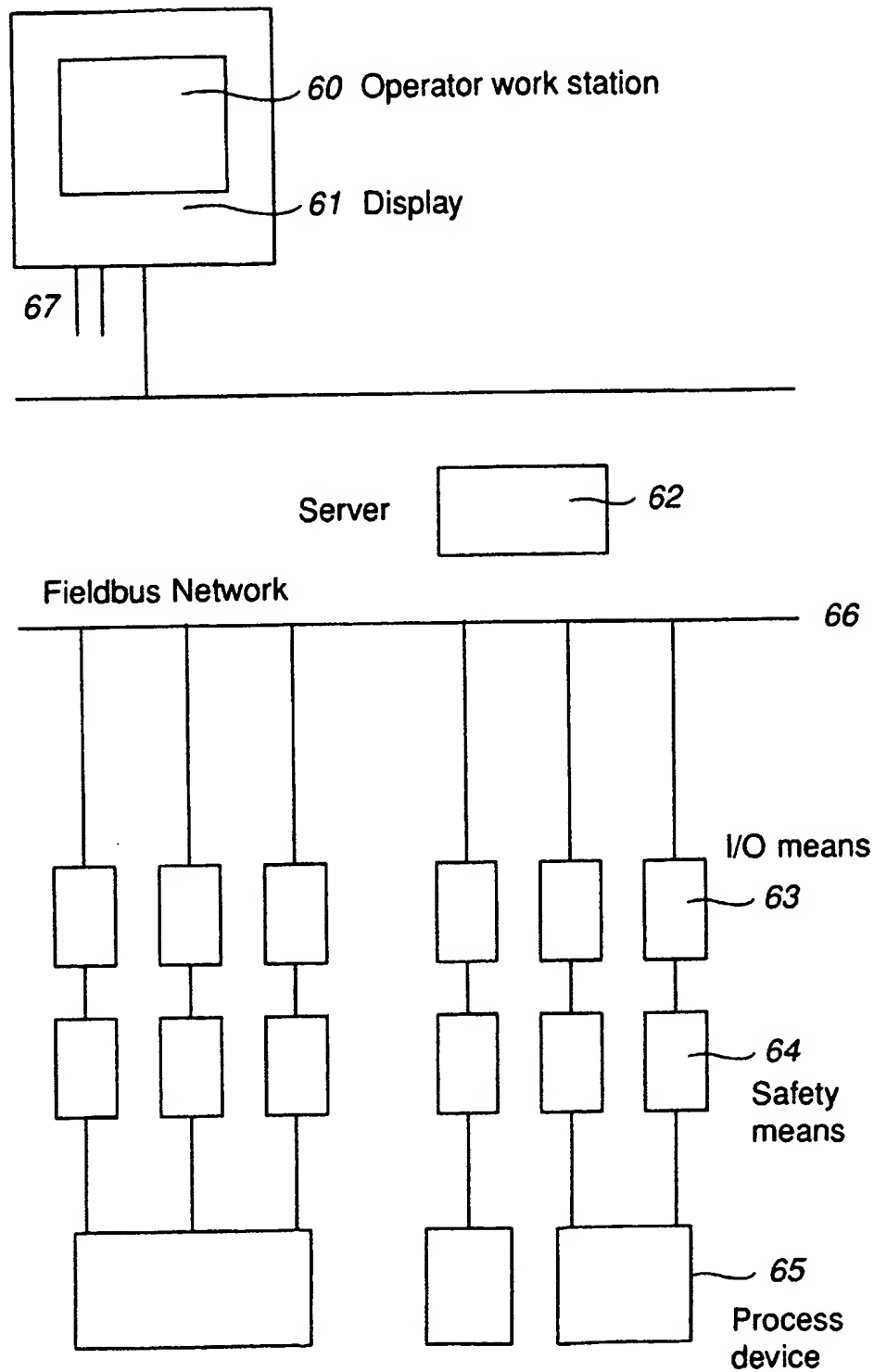


Fig. 6

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